DOCUMENT RESUME

ED 469 099 SE 066 845

| | |
|---|---|
| TITLE | Sample Curriculum Model, Grade 2, Based on the 1998 Arkansas State Mathematics Framework. |
| INSTITUTION | Arkansas State Dept. of Education, Little Rock. |
| PUB DATE | 1998-00-00 |
| NOTE | 33p.; For Sample Curriculum Models, Grades K-8, see SE 066 843-851. |
| AVAILABLE FROM | For full text: http://arkedu.state.ar.us/curriculum/benchmarks.html. |
| PUB TYPE | Guides - Non-Classroom (055) -- Legal/Legislative/Regulatory Materials (090) |
| EDRS PRICE | EDRS Price MF01/PC02 Plus Postage. |
| DESCRIPTORS | *Academic Standards; Algebra; Geometry; *Grade 2; Mathematics Curriculum; *Mathematics Instruction; Measurement; Number Concepts; Numeracy; Patterns in Mathematics; Primary Education; Probability; *State Curriculum Guides; Statistics |
| IDENTIFIERS | *Arkansas |

ABSTRACT

This document consists of a sample curriculum model for grade 2 mathematics based on the 1998 Arkansas State Mathematics Framework. The document is divided into five sections: (1) Number Sense, Properties, and Operations; (2) Geometry and Spatial Sense; (3) Measurement; (4) Data Analysis, Statistics, and Probability; and (5) Patterns, Algebra, and Function. Within each section the standards are exemplified and articulated by benchmarks, suggested assessments, and possible strategies and activities for teaching the standard. A blackline master checklist is included as an appendix. (MM)

Reproductions supplied by EDRS are the best that can be made
from the original document.

SE

ED 469 099

# SAMPLE CURRICULUM MODEL

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J. Goldman

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

## GRADE 2

based on the 1998 Arkansas State Mathematics Framework
Arkansas Department of Education, 1998



BEST COPY AVAILABLE

SE0600845

Grade Level_2_

**NUMBER SENSE, PROPERTIES, AND OPERATIONS**

| Standard<br>NPO.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.1.1<br><br>Demonstrate number sense (concepts of counting, grouping, and place value) using manipulatives. | Students will write numerical symbols related to sets which are represented by pictures of manipulatives.<br><br>Students will count forward to 1000 and will count forward and back by twos, threes, fives, and tens from any given number.<br><br>Students will demonstrate the patterning of place value. | . Teacher observation<br>. Peer and self evaluation<br>. Teacher-made tests<br>. Checklist<br>. Statewide tests<br>. Performance | . Students draw pictures of manipulatives and write the numerical symbol for the pictures.<br>. Students are given pictures of manipulatives or real-world objects and they write the numerical symbol for each picture.<br>. The class collect 1000 pop tops and cashes them in at a recycling center.<br>. Count the pop tops taking two, three, five, and ten at a time.<br>. Whole class, as a chorus, count to 1000 by fives and tens.<br>. Participate in counting songs and rhymes.<br>. Read: Dancing in the Moon: Counting Rhymes by Eichenberg, Fritz; Hippos Go Beserk by Boynton, Sandra; One Watermelon Seed by Lottridge, Celia; The Button Box by Reid, Margarette. |
| SLE NPO.1.2<br><br>Develop meaning for the operations by modeling and | Students will discuss and model (concretely, pictorially, and symbolically) | . Teacher observation<br>. Peer and self evaluation<br>. Teacher-made test<br>. Checklist | . Students prove their paper-pencil and mental math answers by using manipulatives.<br>. Students model |

| | | | |
|---|---|---|---|
| discussing a variety of problem situations. | problem situations involving 2-digit addition with and without carrying and 2-digit subtraction with and without regrouping. | . Appro-priate response to teacher direct questions<br>. Improved vocabulary<br>. Verbal explanation<br>. Demon-stration<br>. Writing | the concept of multiplication using manipulatives. (Ex. Form four groups with three objects in a group and discuss the ways of finding how many objects there are in all.)<br>. Students discuss, in small groups, problem situations using 2-digit addition, 2-digit subtraction, and simple multiplication.<br>. Read: Willy and His Wheel Wagon by Gibbons, Gail |

Grade Level_2_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.1.3<br><br>Apply and master counting, grouping, place value, and estimation. | Students will apply and master counting forward to 1000 and will apply and master counting forward and back by twos, threes, fives, and tens.<br><br>Students will apply and master the patterning of place value.<br><br>Students will estimate to the nearest tens and hundreds using rounding strategies. | . Teacher observation<br>. Peer and self evaluation<br>. Checklist<br>. Teacher-made test<br>. State-wide test<br>. Perform-ance | . See NPO.1.1<br>. Students are given counting sticks and are told to display about 10 sticks. They are guided to develop the rounding strategies. The students repeat the activity using bundles of ten and round to the nearest hundred using the strategies developed in the previous exercise. |
| SLE NPO.1.4<br><br>Solve problems using terminology and symbols of operations (e.g., add, subtract, multiply, and divide). | Students will relate mathematical terminology and symbols of operations involving addition and subtraction (add, subtract, +, -, =, sum, addend, subtrahend, minuend, difference, and equal) to problem situations. | . Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Anecdo-tal record<br>. State-wide tests<br>. Teacher-made test<br>. Writing | . See NPO.1.2<br>. Students will make flash cards containing the symbols of operations and mathematical terminology. They will use the flash cards at home and with a partner at school.<br>. Students will take problem solving situations and represent them symbolically and numerically. |

Grade Level 2

## NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.1.5<br><br>Demonstrate competency of operations (e.g. add, subtract, multiply, and divide) using mental math and technology. | Students will demonstrate competency with addition and subtraction facts using mental math and technology. | . Teacher observation<br>. Peer and self evaluation<br>. Appropriate response to teacher direct questions<br>. State-wide tests<br>. Teacher-made test<br>. Performance | . Students will check paper-pencil and mental calculations to basic addition and subtraction using calculators.<br>. Set up a computer center with appropriate software for student use. (Ex. Subtract with Balancing Bear by Sunburst or Troll Math Class Level 2: I Can Carry and Borrow)<br>. Play games that enhance mental math, such as "Around The World" |
| SLE NPO 1.6<br><br>Use manipulatives to demonstrate and compare rational numbers/fractions (e.g., find simple parts of a whole). | Students will concretely, pictorially, and symbolically demonstrate the concept of fractions as part of a whole using the fractions 1/2, 1/3, 1/4, 1/5, 1/6, 1/8, and 1/10. | . Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Teacher-made test<br>. State-wide tests<br>. Demonstration | . Students will write fractions for fraction bars.<br>. Students are given color tiles or color cubes or interlink cubes and are told to represent a specified fraction. (Ex. The student chooses ten cubes and holds up one and says that the one cube is 1/10 of the ten cubes.)<br>. Students are given pictures of pies and they write the corresponding fraction. They determine which pie would offer them the largest/smallest piece, thus determining the largest and smallest fraction. |

Grade Level 2

## NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.1.7<br><br>Communicate number sense, properties, and operations through journal writing, creating problems, constructing mathematical sentences, etc. | Students will communicate understanding of number sense, properties, addition, and subtraction through journal writing, creating problems, constructing mathematical sentences, etc. | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. Verbal explanation<br>. Journal<br>. Appropriate response to teacher directed questions<br>. Improved vocabulary<br>. Statewide tests<br>. Teacher-made test<br>. Writing | . See NPO.1.1, NPO.1.2, NPO.1.3, NPO.1.4, NPO.1.5, NPO.1.6<br>. Students compose a math story using correct number sense, properties, and basic addition and subtraction. The story is recorded in their journals.<br>. Students are given an addition or subtraction problem and are told to write how they would find the answer. They then orally share with the class their method for solving the problem. This is placed in their journals. |

Grade Level_2_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.2.1<br><br>Represent numbers and operations (addition, subtraction, multiplication, and division) in a variety of forms using manipulatives, symbols, and graphs (pictographs, etc.) | Students will represent numbers and 2-digit addition with and without carrying and 2-digit subtraction with and without regrouping in a variety of forms using manipulatives, symbols, and graphs. | . Teacher observation<br>. Peer and self evaluation<br>. Appropriate response to teacher directed questions<br>. State-wide test<br>. Teacher-made test<br>. Demonstration | . See NPO.1.0<br>. Students represent the number of students in the teacher's class in the past years using a line graph. They analyze and compare the data using addition and subtraction. |
| SLE NPO.2.2<br><br>Apply elementary number theory (skip counting, patterns, number series, odd and even numbers, multiples, fractions, etc.). | Students will apply elementary number theory (skip counting, patterns, number series, odd and even numbers, ordinal numbers, etc.). | . Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. Teacher-made test<br>. State-wide test<br>. Performance | . See NPO.1.1 and NPO.1.3<br>. Students will count by fives and tens to determine the value of a hand full of dimes and nickels.<br>. Students will continue the pattern for counting quarters to determine the amount of money represented by a handful of play quarters.<br>. Students will identify odd and even numbers on a hundred chart by circling the odd numbers and putting a square around the even numbers.<br>. Students identify their place in line by saying first, second, third, etc.<br>. Read: Bicycle Race by Crews, Donald; Harriet Goes to the Circus by Maestro, Betsy; I Can Count the |

| | | | |
|---|---|---|---|
| | | | <u>Petals of a Flower</u> by Wahl, John, and Stacy Wahl |

Grade Level 2

## NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.2.3<br><br>Apply computation (add, subtract, multiply, and divide) and estimation to real-world problems. | Students will apply addition, subtraction (variety of meanings), and estimation to real-world problems. | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. State-wide test<br>. Teacher-made test<br>. Writing | . See NPO.1.2<br>. Students estimate how many people would be in a room if two or three specific classrooms are combined. They check their answer by addition.<br>. Students guess the number of items in a guessing jar. The winner gets the items in the jar. |
| SLE NPO.2.4<br><br>Use mental math, manipulatives, and technology to solve problems. | Students will use mental math, manipulatives, and technology to solve 2-digit addition problems (with and without carrying) and 2-digit subtraction (with a variety of meanings) problems (with and without regrouping). | . Teacher observation<br>. Peer and self evaluation<br>. Teacher-made test<br>. State-wide test<br>. Project | . See NPO.1.2, NPO.1.5, NPO.2.1<br>. Students are asked to solve a number of 2-digit addition and 2-digit subtraction problems either mentally or with manipulatives. They check their answers using a calculator. |

Grade Level 2

## NUMBER SENSE, PROPERTIES, AND OPERATIONS

| Standard NPO.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE NPO.2.5<br><br>Describe and compare quantities by using concrete and real-world models of fractions. | **Students will describe and compare quantities by using concrete and real-world models of the fractions 1/2, 1/3, 1/4, 1/5, 1/6, 1/8, and 1/10.** | . **Teacher observation**<br>. **Peer and self evaluation**<br>. **Anecdotal records**<br>. **Verbal explanation**<br>. **Journal**<br>. **Appropriate response to teacher directed questions**<br>. **Improved vocabulary**<br>. **State-wide tests**<br>. **Demonstration**<br>. **Exhibition** | . **See NPO.1.6.** |

2rade Level 2

## GEOMETRY AND SPATIAL SENSE

| Standard GS.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.1.1<br><br>Sort, classify, and construct geometric shapes/figures using a variety of manipulatives. | Students will classify and construct geometric shapes/figures using a variety of manipulatives. | . Teacher observation<br>. Peer and self evaluation<br>. Project<br>. State-wide test<br>. Demon-stration<br>. Teacher-made test | . Read: Shapes by Reiss, John, Jr.: Circles, Triangles, and Squares by Hoban, Tana.<br>. Students will construct squares, triangles, circles, rectangles, and ovals using straws and forming a mobile. |
| SLE GS.1.2<br><br>Describe, model, draw, construct, compare and classify shapes in one, two, and three dimensions. | Students will describe, draw, compare, and classify shapes two dimensions.<br><br>Students will identify lines as horizontal, vertical, perpendicular, parallel and name lines and line segments using two points. | . Teacher observation<br>. Peer and self evaluation<br>. Portfolio<br>. State-wide test<br>. Demon-stration<br>. Teacher-made test | . See GS.1.1<br>. Students will construct models of horizontal, vertical, perpendicular (form right angles), and parallel lines with straws or string. If string is used, then students will glue the string to paper and place in their portfolio.<br>. Given a line and a line segment, the student will write the name using two points on the line or line segment. |

2rade Level_2_

**GEOMETRY AND SPATIAL SENSE**

| Standard GS.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.1.3<br><br>Determine the relationship between shapes/figures using congruence and similarity, and using transformations (flips, slides, and rotations). | Students will determine and draw similar and congruent figures.<br><br>Students will trace and construct slides, flips, and turns. | . Teacher observation<br>. Peer and self evaluation<br>. Teacher made test<br>. Portfolio<br>. State-wide test | . Students are given pictures of similar and congruent figures. They differentiate and label the figures.<br>. Students construct pictures by tracing two-dimensional objects that have been slid, flipped, or turned. These are place in their portfolio. |
| SLE GS.1.4<br><br>Predict and determine the results of combining, dividing, and subdividing shapes/figures. | Students will predict the results of combining and dividing shapes/figures. | . Teacher observation<br>. Peer and self evaluation<br>. Portfolio<br>. State-wide test<br>. Project | . Students are asked what shapes/figures would be formed by combining two rectangles or dividing one rectangle. They are given two rectangles and assess their answers. Students trace the shapes/figures formed with the rectangles and place these in their portfolio. The activity is repeated using other shapes/figures, this time having a competition to see who could form the most shapes/figures.<br>. Students take scrap material and cut them into shapes and glue them on paper to form a quilt square. |

Grade Level 2

## GEOMETRY AND SPATIAL SENSE

| Standard GS.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.1.5<br><br>Demonstrate spatial awareness (positional relationship, size, direction, area, volume, etc.). | Students will demonstrate spatial awareness (positional relationship, size, direction, area, etc.). | . Appropriate response to teacher direct questions<br>. Teacher observation<br>. Peer and self evaluation<br>. Statewide test<br>. Demonstration | . Read: Over, Under, and Through: and Other Spatial Concepts by Hoban, Tana.<br>. Students are each given a sheet of blank paper. With a partner they turn back to back. One partner tells the other partner what to draw (one step at a time). The description can only be orally and the picture is not looked at by the describer until the describer is finished. |
| SLE GS.1.6<br><br>Use manipulatives and technology to demonstrate geometric concepts (positional relationship, size, direction, area, volume, etc.). | Students will use manipulatives to demonstrate geometric concepts (positional relationship, size, direction, area, etc.). | . Statewide test<br>. Teacher-made test<br>. Demonstration<br>. Teacher observation<br>. Peer and self evaluation | . Extend GS.1.5 to have the describer tell his/her partner where to place attribute blocks to form a picture.<br>. Use appropriate computer software such as Shape Up! by Sunburst. |

Grade Level 2

**GEOMETRY AND SPATIAL SENSE**

| Standard GS.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.1.7<br><br>Demonstrate geometric and spatial sense through written and oral communication (e.g., draw and describe a color cube model using isometric dot paper). | Students will demonstrate geometric and spatial sense of two- and three-dimensional objects through oral and written communication. | . Appro-priat response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. Portfolio<br>. State-wide test<br>. Teacher-made test<br>. Writing | . See GS.1.3, GS.1.4, GS.1.5, GS.1.6. Have students verbalize or write responses to teacher's questions.<br>. A display of three or four objects is set up in the class. The students are to write, in complete sentences, a description of the location of each object in the display. This is then place in their portfolio. |

Grade Level 2

## GEOMETRY AND SPATIAL SENSE

| Standard GS.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.2.1<br><br>Estimate and measure the size of geometric figures/shapes in the real world (length, width, perimeter, area, volume, etc.). | Students will estimate and measure the size (length, width, perimeter) of geometric figures/shapes in the real world using non-standard units and standard units (inches, feet, centimeters, and ½ inch). | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. Teacher-made test<br>. State-wide test<br>. Performance<br>. Log or journal | . Identify various objects in the classroom that represent geometric shapes and determine their size (length and width) using non-standard and standard units of measure. (Ex. A bottom of a box of tissue represents a rectangle or square. The students measure the width and length using a plastic chain to determine how many links long or wide the bottom of the box is and determines the perimeter. The activity is repeated using a ruler to measure to the nearest ½ inch or centimeter.) |
| SLE GS.2.2<br><br>Construct and explain geometric patterns using concrete and pictorial models, with one or more attributes (color, shape, size, etc.). | Students will replicate and explain geometric patterns using concrete and pictorial models, with two attributes. | . Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. State-wide test<br>. Demonstration<br>. Project | . Students are presented a pattern using attribute blocks and are asked to continue the pattern and transfer it pictorially to paper.<br>. Students construct their own geometric pattern using attribute blocks. They transfer the pattern to paper. The pattern is left in tact and another student transfers it to paper and extends the pattern. |

Grade Level 2

## GEOMETRY AND SPATIAL SENSE

| Standard GS.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE GS.2.3<br><br>Use manipulatives and technology to solve problems involving perimeter, area, volume, etc. | Students will use manipulatives and technology to solve problems involving perimeter and area. | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. State-wide test<br>. Performance<br>. Teacher-made test | . See GS.1.6<br>. The students are assigned the task of covering a floor using 1 foot square tiles. They are to determine how many tiles would be needed to go around the room along the wall one time (perimeter) and how many would it take to cover the floor (area).<br>. Students use appropriate software to reenforce the concepts of perimeter and area. |
| SLE GS.2.4<br><br>Illustrate geometric concepts through written and oral communication. (For example, "I am a rectangular house. My windows are squares. My door is a rectangle. My roof is a triangle.") | Students will demonstrate geometric and spatial sense of two- and three-dimensional objects through written and oral communication as represented in real life. | . Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. Portfolio<br>. State-wide test<br>. Teacher-made test<br>. Writing | . See GS.2.1, GS.2.2, and GS.2.3. Students will verbalize and/or write their answers to the teacher's questions. The written answers will be placed in their portfolios. |

Grade Level_2_
**MEASUREMENT**

| Standard M.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE M.1.1<br><br>Demonstrate and apply the concept of comparison (large, small, long, short, etc.) according to a given attribute (color, shape, size, etc.). | Students will demonstrate and apply the concept of comparison in time (which takes longer), money (which is more), temperature (what is the hottest), and weight (which is heavier) according to four or five attributes (shape, size, purpose, textures, etc.). | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Statewide test<br>. Teacher-made test | . Students are given a chart of recorded temperatures for a specific month over a period of five years. The students make comparisons of the temperatures.<br>. Students are given a choice of toy catalogs. They are to choose and cut out three of the toys and their prices they desire the most. They compare the prices of the toys.<br>. Students are given a wide variety of fruits and are to weigh each in order to compare their weights.<br>. Students are taught to use a stopwatch. They time each other in completing a certain task and compare the times. |
| SLE M.1.2<br><br>Select, demonstrate, and defend the use of appropriate units of measure. | Students will select and use the appropriate units of measure for temperature (degrees), money (bills and coins), length (inches, feet, centimeters, ½ inch), capacity (cups, pints, quarts, gallons), and time (15-minute intervals, a.m., p.m., noon, midnight). | . Teacher observation<br>. Peer and self evaluation<br>. Verbal explanation<br>. Appropriate response to teacher direct questions<br>. Improved vocabulary<br>. Anecdotal records<br>. Checklist | . See GS.2.1<br>. Extend M.1.1 to have the students identify the unit of measure used for each activity.<br>. Students will use a clock to determine the proper time for scheduled activities.<br>. Students will make a treat that requires no cooking such as pudding or gelatin. |

| | | | |
|---|---|---|---|
| | | . State-wide test<br>. Teacher-made test<br>. Writing | |

Grade Level_2_
**MEASUREMENT**

| Standard **M.1.0** | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE **M.1.3**<br><br>Convert from one measurement to another within the same system (feet to yards, centimeters to meters, etc.). | **Students will convert from one unit of measurement to another in length (1 foot = 12 inches), money (all coins and one-dollar bill and five-dollar bill), and time (average month = 30 days; 365 days = 1 year, 24 hours = 1 day).** | . Teacher observation<br>. Peer and self evaluation<br>. Appropriate response to teacher direct question<br>. Verbal explanation<br>. Improved vocabulary<br>. State-wide test<br>. Demonstration<br>. Teacher-made test | . See M.1.2<br>. Read: The Twelve Days of Christmas by Wildsmith, Brian.<br>. Purchase items from the sales paper in the newspaper.<br>. Students determine how many days of school they attend in a school year and convert the total days to months.<br>. Students calculate how many days old they are. |

Grade Level_2_
**MEASUREMENT**

| Standard M.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE M.2.1<br><br>Select and use appropriate standard (inches, feet), non-standard (paper clip, thumbnail), and metric (centimeter, meter) measuring instruments (e.g., rulers, scales, measuring tape, yard stick, meter stick, thermometer, etc.). | **Students will use appropriate standard and non-standard measuring instruments (rulers for length; scales for weight; clock for time; thermometer for temperature; measuring cups or beakers for capacity).** | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Demon-stration<br>. Teacher-made test<br>. Checklist<br>. Anecdo-tal records | . See M.1.1, M.1.2, and M.1.3 |

Grade Level_2_
**MEASUREMENT**

| Standard M.3.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE M.3.1<br><br>Estimate and measure quantities such as weight, length, area, volume, money, time, and temperature. | **Students will estimate and measure quantities in non-standard and standard units (inches, pounds, degrees, hours, feet, centimeters, cups, pints, quarts, gallons).** | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Demon-stration<br>. Teacher-made test<br>. Checklist<br>. Anecdo-tal records<br>. Appro-priate response to teacher direct questions<br>. Log or journal | . Extend M.2.1 by having the students estimate the answers before the actual measurement is determined. |
| SLE M.3.2<br><br>Solve problems using measuring instruments and technology. | **Students will solve problems using standard and non-standard measuring instruments (ruler, scale, clock, etc.).** | . Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. State-wide test<br>. Teacher-made test<br>. Writing | . See M.2.1 |

Grade Level_2_
**MEASUREMENT**

| Standard M.3.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE M.3.3<br><br>Pose problems using customary (inches, feet, etc.), non-standard (paper clip, thumbnail, etc.), and metric measurements (centimeters, meters, etc.) in real-world situations. | **Students will orally and in written form pose problems using non-standard and standard measurements in real-world situations.** | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Teacher-made test<br>. Appro-priate response to teacher direct questions<br>. Portfolio<br>. Verbal explanation<br>. Improved vocabulary<br>. Project<br>. Writing | . Extend M.3.1 by having the students dictate then write a problem in a real-world situation that could be solved using non-standard and standard units of measure. (Ex. Jose goes to an amusement park and realizes he needs to know how tall he is in order to determine if he can ride some of the rides that have height limitations. How can Jose determine his height?) |

Grade Level_2_

**DATA ANALYSIS, STATISTICS AND PROBABILITY**

| Standard DSP.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE DSP.1.1<br><br>Utilize the scientific method for data analysis.<br>A. Identify the purpose (problem statement) for data collection.<br>B. Make a prediction about the final results of data collected.<br>C. Collect and organize data (tables, graphs, etc.).<br>D. Analyze and interpret data (prediction, inference, conclusion, etc.).<br>E. Display data using appropriate bar graphs, line graphs, tables, pie graphs, etc., with and without technology. | Students will identify the purpose (problem statement) for data collection (organization, etc.).<br><br>Students will make, record, and analyze predictions about the final results of data collection (occurred sooner, later, etc.).<br><br>Students will collect, organize and display (line plots, bar graphs, etc.) data in a variety of formats (physically, pictorially, and with written symbols). | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Appropriate response to teacher direct questions<br>. Performance<br>. Verbal explanation<br>. Improved vocabulary<br>. Project<br>. Writing | . Students identify the purpose for data collection (e.g., What the favored flavor of ice cream of the students in the class; Comparison of the parents that went to college and those who did not to the number of grandparents that went to college or not). They predict the final results of the data collection (e.g., more students will like chocolate; more parents went to college than grandparents). They collect data (e.g., poll students, interview parents and grandparents, etc.) and organize it (e.g., tally marks, checklist, etc.). They display the data in a variety of formats (e.g. glue a cotton ball of a corresponding color of a flavor to a poster board to make a bar graph; transfer the information to the correct format of a line plot or stem and leaf plot; make a circle graph depicting the number of fathers, mothers, grandmothers, and grandfathers, that went to college.) |

| | | | |
|---|---|---|---|
| SLE DSP.1.2<br><br>Explain the results of data collection using oral and written communication. | Students will orally, pictorially, and in written format explain the results of data collection. | . Teacher observation<br>. State-wide test<br>. Performance<br>. Peer and self evaluation<br>. Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Writing<br>. Project | . Extend DSP.1.1 to have students orally and in writing explain the results of the data collected. |

Grade Level_2_

**DATA ANALYSIS, STATISTICS AND PROBABILITY**

| Standard DSP.2.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE DSP.2.1<br><br>Predict the results of data collection and demonstrate the concept of chance through the use of manipulatives. (For example: What is the probability of drawing one red marble from a bag of multicolored marbles?) | Students will make predictions and demonstrate the concept of chance through the use of manipulatives. | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Demon-stration<br>. Log or journal | . See DSP.1.1<br>. Students determine the likelihood of flipping heads or tails with a coin.<br>. Students discriminate against fair and unfair spinner activities. |
| SLE DSP.2.2<br><br>Record the results of data collection with a variety of formats that could include charts, graphs, tables, and technology, using oral and/or written communication. | Students will record the results of data collection with a variety of symbolic formats including line plots, stem and leaf plots, and circle graphs using oral and written communication. | . Teacher observation<br>. State-wide test<br>. Peer and self evaluation<br>. Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Project<br>. Log or journal | . Extend DSP.1.2 and DSP.2.1 |

Grade Level_2_
**DATA ANALYSIS, STATISTICS AND PROBABILITY**

| Standard DSP.3.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE DSP.3.1<br><br>Predict results, analyze data, and find out why some results are more likely, less likely, or equally likely. | Students will predict results and analyze data to be more likely, less likely, or equally likely. | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Perform-ance<br>. Log or journal | . See DSP.1.1 and DSP.2.1 |
| SLE DSP.3.2<br><br>Make a true statement based on a simple concept of average (median, mean, mode, and range) for a small sample size. | Students will, in written form, make a true statement based on the simple concepts of mode, median, and range. | . Teacher observation<br>. State-wide test<br>. Peer and self evaluation<br>. Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Exhibi-tion<br>. Teacher-made test | . Students are presented with a series of numbers and are told to determine the mode, the median, and the range. They write the answers using complete sentences.<br>. Students take the ages of the individuals in their family and calculate the mode, median, and range of the ages, then write and explain the results in complete sentences. |

Grade Level_2_
**DATA ANALYSIS, STATISTICS AND PROBABILITY**

| Standard DSP.3.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE DSP.3.3<br><br>Use the tools of technology to assist in gathering, organizing, and presenting information. | **Students will use the tools of technology to assist in presenting information.** | . Teacher observation<br>. Peer and self evaluation<br>. Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Exhibition<br>. Project<br>. Writing | . Students will use appropriate computer software to present information such as Math Keys by Houghton Mifflin. |

Grade Level_2_
PATTERNS, ALGEBRA AND FUNCTION

| Standard PAF.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE PAF.1.1<br><br>Sort and classify a wide variety of materials. | Students will sort a wide variety of materials using two attributes (color, size, shape, etc.). | . Teacher observation<br>. Peer and self evaluation<br>. Anecdotal records<br>. Statewide test<br>. Exhibition<br>. Demonstration<br>. Checklist | . See GS.1.1<br>. Students sort and classify play ground equipment.<br>. Students sort and classify the numbers 1 through 20 (e.g., numbers with one digit are separated from numbers with two digits, etc.) |
| SLE PAF.1.2<br><br>Describe, extend, and create a wide variety of patterns using concrete models. | Students will describe and extend a wide variety of patterns to symbols using a wide variety of materials (transfer from concrete to symbols). | . Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. Statewide test<br>. Performance<br>. Checklist | . See GS.2.2<br>. See NPO.1.1 have students determine the pattern for skip counting. |

Grade Level_2_
**PATTERNS, ALGEBRA AND FUNCTION**

| Standard PAF.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE PAF.1.3<br><br>Demonstrate equality (=) and inequality (<, >) using manipulatives and symbols. | **Students will connect manipulative, pictorial, and symbolic representation (in any order) of number sentences using <, >, =.** | **. Teacher observation<br>. Peer and self evaluation<br>. Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Improved vocabulary<br>. Statewide test<br>. Demonstration<br>. Teacher-made test** | **. Students are given a sheet of numerical comparisons presented pictorially and symbolically to complete with or without manipulatives.** |
| SLE PAF.1.4<br><br>Demonstrate the beginning concept of a variable. (Use boxes, letters, or other symbols to stand for any number or object in simple situations, with or without concrete material, such as 6 + ___ = 8 or 3 + B = 4, etc.). | **Students will write an answer for an unknown that will form a true mathematical statement. (e.g., ___ - 9 = 7; 7 + ___ = 16; 4 x ___ = 8)** | **. Appropriate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. Statewide test<br>. Teacher-made test<br>. Demonstration** | **. Extend PAF.1.3 to include mathematical sentences presented with variables.** |

Grade Level_2_
**PATTERNS, ALGEBRA AND FUNCTION**

| Standard PAF.1.0 | Benchmarks | Assessments | Strategies/Activities |
|---|---|---|---|
| SLE PAF.1.5<br><br>Express mathematical relationships in one- and two-dimensions. (Length x Width = Area, L x W = A, etc.) | **Students will express mathematical relationships on one- and two-dimensions (e.g., 1 foot = 12 inches, 1 ft. = 12 in.; 24 hours = 1 day, 24 hrs. = 1 day; etc.).** | . Teacher observation<br>. Peer and self evaluation<br>. State-wide test<br>. Teacher-made test<br>. Journal<br>. Perform-ance | . Students will be assigned mathematical terms and their abbreviations as an extension to weekly spelling tests.<br>. Extend M.1.2 to have students write the units of measure both one- and two) dimensionally. |
| SLE PAF.1.6<br><br>Use oral and/or written communication to interpret created patterns. | **Students will pictorially, orally, and in writing communicate to interpret a wide variety of created patterns.** | . Appro-priate response to teacher direct questions<br>. Verbal explanation<br>. Teacher observation<br>. Peer and self evaluation<br>. Improved vocabulary<br>. State-wide test<br>. Teacher-made test<br>. Perform-ance<br>. Writing | . See PAF.1.2 |

# Mathematics Checklist for Second Grade

| Student Name: | | | |
|---|---|---|---|
| COMPETENCIES | Introduced | Progressing | Proficient |
| **Number Sense, Properties, and Operations** | | | |
| Count and keep track of large quantities (100-999) | | | |
| Use objects to show hundreds, tens, and ones place value | | | |
| Compare and order numbers to 100 | | | |
| Use a variety of strategies to estimate a quantity | | | |
| Develop and use strategies for adding and subtracting; use both horizontal and vertical notations | | | |
| Model addition and subtraction situations; know when to add or subtract | | | |
| Use the Hundreds Chart to add and subtract; find the distance between two numbers | | | |
| Judge the reasonableness of the answer to a computation problem | | | |
| Illustrate and explain the relationship between addition and subtraction | | | |
| Create a story problem for a given equation | | | |
| Add a string of numbers by grouping numbers that go together | | | |
| Record and explain solution strategies using appropriate vocabulary | | | |
| Represent a number in a variety of numerical forms (ex: 28; 10+10+8; 2 tens and 8 ones; almost 30; <30; etc.) | | | |
| Show relationships between counting, grouping, and place value using manipulatives | | | |
| Show relationship between skip counting and grouping (using manipulatives) | | | |
| Group objects into same size sets | | | |
| Construct an array to represent a number and show halves, thirds, and fourths | | | |
| Model fractions using manipulatives and real-world objects | | | |
| Use the calculator as a problem-solving tool | | | |
| | | | |
| **Geometry and Spatial Sense** | | | |
| Draw a given shape | | | |
| Visualize, construct, and draw rectangular arrays | | | |
| Illustrate and describe the characteristics of a triangle and a rectangle | | | |
| Build and take apart 2- and 3-dimensional shapes | | | |
| Identify a 3-dimensional object by the outlines of its faces | | | |
| Identify objects with mirror symmetry; show line of symmetry | | | |
| Create 2-dimensional symmetrical designs | | | |
| Show the rotations (turns) of a given object | | | |

## Mathematics Checklist- Second Grade, Page 2

| | Introduced | Progressing | Proficient |
|---|---|---|---|
| **Measurement** | | | |
| Explain need for measuring with standard units (compare results of measuring with different non-standard units) | | | |
| Measure lengths of objects using inches | | | |
| Show how many inch squares will fit in a space; show how many inch cubes will fit in a container | | | |
| Estimate length, area, volume | | | |
| Count by 5 and 10 using money | | | |
| Tell time to five-minute intervals | | | |
| Compare lengths of time in familiar settings (Which is longer: lunch or recess?) | | | |
| **Data, Probability, and Statistics** | | | |
| Create a Venn Diagram to show relationships between and among items | | | |
| Collect, record, and represent categorical data | | | |
| Collect, record (tally), and represent numerical data | | | |
| Recognize and explain the range of data; identify outliers | | | |
| Interpret and make hypotheses based on data | | | |
| Use more than one representation to view data | | | |
| Use a chart or table to solve problems | | | |
| Use experiences to tell whether an event is likely or unlikely to occur | | | |
| **Patterns, Algebra, and Functions** | | | |
| Show and describe patterns in the world (nature) | | | |
| Match symbols to objects, numbers, quantities, and words | | | |
| Form a number sentence for a real-world problem | | | |
| Use manipulatives to model balancing a number sentence (2+3=1+4) | | | |
| Find the missing addend | | | |
| Demonstrate an understanding of the commutative property of addition | | | |
| Write numerical expressions to equal a given answer | | | |
| Write equations to solve problems | | | |
| Skip count by 2, 3, 4, 5, and 10 | | | |

Comments:

**U.S. Department of Education**
*Office of Educational Research and Improvement (OERI)*
*National Library of Education (NLE)*
*Educational Resources Information Center (ERIC)*

# NOTICE

## Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").